



Theory name and proponents	Short description	Relevance to teaching math
Cognitive Load Theory (Sweller)	In this theory, Sweller proposes that our long-term memory is made up of schemas which form a basis for how we synthesize and process information in the short-term memory. In the absence of schemas, instructional guidance provides learners with a substitute and directs them to forming their own schemas.	By providing students with instructional guidance when they do not have a schema you are avoiding students feeling “lost” when exposed to mathematical concepts. In my opinion, instructional guidance also encourages the development of problem solving skills, reasoning, and critical thinking skills. From my experience, students need a slight push from time to time. Training these skills in students will enhance efficiency and effectiveness of learning over time.
Cognitive Theory of Multimedia Learning (Mayer)	In his theory, Mayer proposes that auditory and visual channels for processing information work better together than individually to	As teachers, we play the role of moderators in the way we present information to students. I believe it is very important that when you

	<p>achieve effective multimedia learning. Mayer also notes that because we can only process a limited amount of information at a time, the learning capacity consists of an active process of filtering, selecting, and organizing information based on pre-existing schemas in order to produce logical mental constructs.</p>	<p>explain something, you write the key elements down, as well as follow the explanation with a diagram or picture as needed. Pacing the explanation is equally important, in order to give students time to filter, select and organize the information presented to them in order for it to be processed and retained long-term more efficiently.</p>
<p>ARCS Model of Motivational Design (Keller)</p>	<p>In his theory, Keller proposes that motivation to learn requires four steps, namely attention, relevance, confidence, and satisfaction. Together, these factors motivate the student towards the concepts presented.</p>	<p>I believe this model is especially useful in a classroom setting, because instruction can be delivered more efficiently if the students' motivation is stimulated and maintained for the duration of instruction. First, students's attention can be grabbed with a hook or minds-on at the beginning of the lesson. Second, students may wonder how the material presented relates to their goals; if the concepts presented are relevant to students' interests, they are likely to be motivated towards learning those concepts. Third, students will be more likely to be interested in completing tasks which have a high probability of success in order to boost or maintain students' confidence. Finally, students will remain motivated if the outcome of their learning meets their expectations to at least a satisfactory level.</p>

<u>Self-Determination Theory</u> (Deci and Ryan)	<p>In their theory, Deci and Ryan propose that people are intrinsically motivated towards learning as long as three basic and innate psychological needs are met, namely competence, relatedness, and autonomy.</p>	<p>Students' motivation varies not only in the degree of motivation they display, but also in the type of motivation. Intrinsic motivation is demonstrated in students when they choose to invest time and energy into activities which bring outcomes such as pleasure, learning, satisfaction, interest, or challenge. This theory is valuable to my teaching practice because from my experience, intrinsic motivation produces more efficient learning, since the learner is more engaged in the process and they do it purely out of enjoyment.</p>
<u>Maslow's Hierarchy of Needs</u> (Maslow)	<p>Maslow's Hierarchy of Needs is a model used in human motivation theory which stresses personal goal and development. Maslow proposes 5 stages in his model. First, physical needs such as food, water, and shelter must be met. Second, safety and security needs have to be met, such as basic protection from physical and emotional harm. Third, people need to feel loved and accepted by others. Fourth, people need to feel confident and respected to fulfill the esteem needs. Finally, self-actualization needs are met when people feel fulfilled and are true to their own self.</p>	<p>In order for students to be motivated to learn, their primary and secondary needs have to be met. As students move through the stages toward self-actualization, they have a constant need to feel that they are cared for, that they belong, and that their self-esteem needs are fulfilled. I found this theory to be relevant to my teaching practice because, from my experience, students whose basic needs are not met often underperform in school. For example, without a proper diet and a reasonable amount of sleep, students' concentration declines and their minds are focused on other things such as hunger.</p>